Appendix D: Protocol to be used for Evaluating Compliance with Streambank Alteration Thresholds

The MIM protocol has been used for all Pacfish/Infish monitoring work in the Region since 2005 and, at least for the time being, is still the method the Forest is using to measure bank alteration. However, recent research (Heitke et al. 2008) has shown that methods for evaluating bank alteration similar to the MIM protocol consistently overestimate the true amount of streambank alteration (Heitke et al 2008). This potential for overestimation can become more problematic when management standards and/or thresholds are set based on more accurate estimates of streambank alteration, as reported in Bengeyfield et. al. 2006. The authors of the MIM protocol discussed this issue in the recently released 2011 MIM Technical Guide and acknowledged that the MIM protocol "is not a measure of the percent of the area of streambank altered, but rather an estimate of the percent of the length of bank altered along the greenline." They tried to assess the magnitude of potential overestimation and concluded that "the MIM protocol tends to overestimate plot area, but more closely estimates length of the greenline altered."

Partly as a result of the recent research in this area, the interagency Regional Technical Team (RTT) (2009) was asked to examine these issues, and it determined that the use of the MIM protocol can produce bank alteration monitoring results that considerably overestimate the actual percentage of streambank altered. It therefore recommended that available information concerning such overestimation be evaluated and accounted for in future consultations on the Forest. More specifically, the RTT laid out three potential options for following up on its recommendation in this regard. In addition, the RTT recognized that the bank alteration values in the 2007 BiOp predate the Forest's use of the MIM protocol and were based primarily on studies and analyses that used more of a true line-intercept method. The RTT recognized the need for and called for further research is to be conducted more comprehensively and rigorously explore and seek to determine the extent of overestimation of actual streambank alteration reflected in the MIM protocol results to assist in setting bank alteration thresholds and in interpreting bank alteration monitoring results.

The other new information the Forest has taken into account concerning this issue are the results of monitoring it and the PIBO Effectiveness Monitoring Program have conducted during the pendency of the 2007 BiOp over the course of the past five grazing seasons. The bank alteration thresholds in the 2007 BiOp included the use of both 10 and 20 percent as endpoint indicators, and a 20 percent term and condition in the incidental take statement for all covered allotments. In general, as the results in the Forest's end-of-season reports show, the use of such thresholds, as well as the effective use of adaptive management to adjust grazing practices where such thresholds have been exceeded, have produced favorable results and allowed for riparian conditions to improve within the Proposed Action area.

Dr. Brett Roper (Fisheries Scientist at the Fish and Aquatic Ecology Unit in Logan, Utah), along with several of his colleagues, followed up on the RTT's recommendation and began investigating these issues in 2010. He is currently assessing sites using a MIM sampling frame that has been "modified" to show 2 cm increments on each of the 5 lines of the plot frame to more accurately determine the area of the alteration when measuring the bank alteration indicator. His research is expected to examine the relationship

between the MIM and the proposed "modified" MIM and will determine the magnitude of bias in the MIM protocol. By the spring of 2012, the research should show the relationship between the MIM protocol and the modified MIM and provide an accurate estimate of the amount of overestimation. Preliminary results from data at 14 sites suggest that there is not a 1:1 relationship between MIM and modified MIM, and appear to confirm that the MIM protocol does in fact considerably overestimate actual bank alteration, particularly at the lower levels of alteration readings.

In light of the foregoing, the Forest has determined to adopt the following approach to bank alteration monitoring for the purposes of the Proposed Action described in the BA:

- The Forest will continue to use the MIM Protocol, at least until the additional research referenced above is completed, for the following reasons: (1) although the RTT and the authors of the MIM Protocol recognized, and there is growing evidence to support, that the MIM Protocol bank alteration monitoring results generally overestimate the actual amount of streambank altered, there is still not adequately reliable data or findings on the extent of that overestimation; (2) the Forest has recently been achieving positive results consistent with its ESA obligations and planning direction through the use of the MIM protocol and, until it has more definitive information upon which to base an adjustment to it or other revisions, it has decided to take an approach to continue the positive results being achieved and use consistent end point indicators, at least until the ongoing research is completed and outcomes are assessed; and (3) the Proposed Action makes greater use of adaptive management than did the one on which consultation was completed for the 2007 BiOp. Therefore, the Forest and/or Level 1 Team have somewhat greater flexibility to consider monitoring results for other indicators such as stubble height and woody browse and otherwise determine an appropriate adjustment, particularly for a minor exceedance.
- The Forest will continue to closely follow and evaluate any research done in this area for potential application and appropriate use during the adaptive management process that is explicitly made a part of the Proposed Action. A revised bank alteration methodology may be adopted when and if it is approved by the regional office as scientifically justified and the MNF Supervisor is certain that her staff is adequately trained and equipped to reliably perform such new method.
- Upon the completion of the ongoing research referenced above, the Forest will assess it to determine whether there is an alternative bank alteration monitoring protocol to MIM (in particular what is referred to above as modified MIM) that both produces more accurate results of actual bank alteration and that the Forest determines is also cost-effective to implement. As a part of the Proposed Action the Forest would shift to the use of that alternative protocol if it finds these criteria are satisfied. The Forest will evaluate whether such a shift would be appropriate. All affected or interested parties should support a more accurate monitoring protocol, particularly given the important values and interests at stake. To be clear, any shift to an alternative bank alteration monitoring protocol consistent with this appendix is explicitly and specifically made a part of the Proposed Action. The Forest will also evaluate the ongoing research upon its completion and analyze whether any further changes need to be made to the Proposed Action at that time as necessary or appropriate.